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Economic Currents: The State of the State Economy

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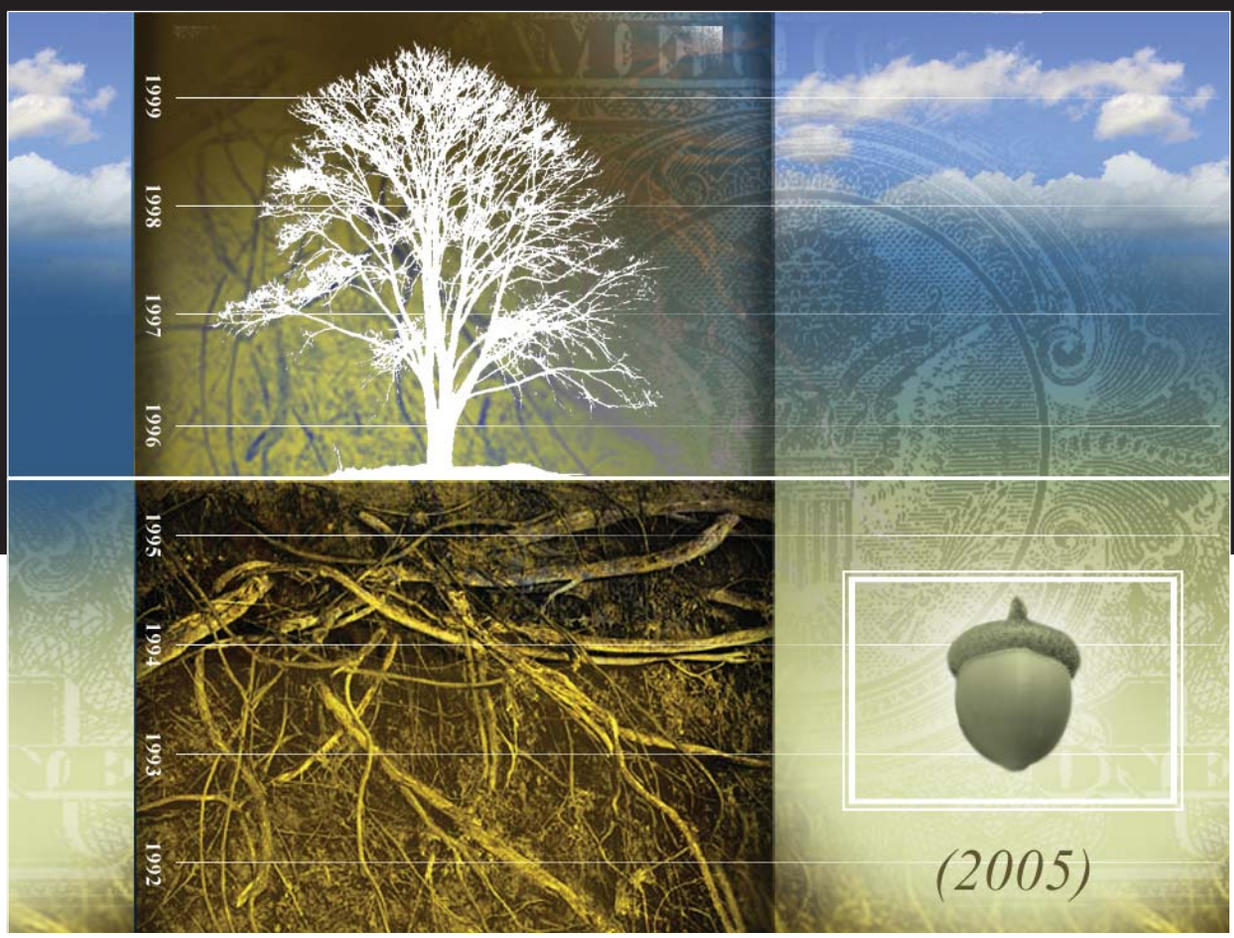
economic CURRENTS



ALAN CLAYTON-MATTHEWS

The Massachusetts economy is recovering, but at a relatively slow pace that is consistent with the state's experience coming out of the last recession. Job creation continues to lag, and the Commonwealth faces continuing economic challenges, including strengthening the technology sector and addressing worker migration.

Patience! The economic recovery in Massachusetts, which entered its eighteenth month in September, is proceeding at a slow, measured pace. The recession here began three months before that of the nation and ended 16 months after that of the nation. This recovery is proceeding at about the same pace as the state's recovery from the prior recession of the late 1980s and early 1990s. As was the case then, improvements in the labor market have lagged growth in output, and many workers are still facing the pain of long-term unemployment. Also like the last time, net migration is negative and the state is experiencing a

Economic Indexes for Massachusetts

The Massachusetts Benchmarks Current Economic Index for October was 129.7, up 4.6 percent from September (at annual rates), and up 2.9 percent over October of last year. The Massachusetts Leading Economic Index for October was 3.7 percent, and the three-month average for August through October was 3.4 percent.

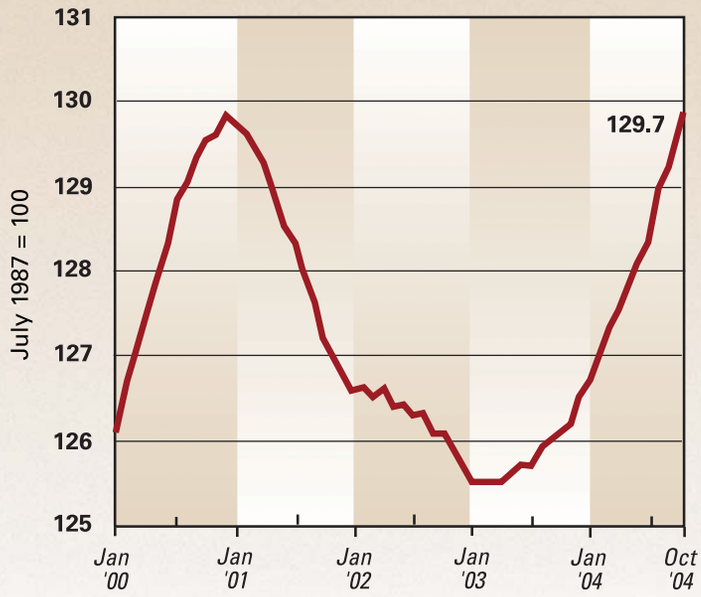
Because the leading index is a forecast of the growth in the current index over the next six months, expressed at an annual rate, it indicates that the Massachusetts economy is expected to grow at an annualized rate of 3.7 percent over the next six months. Because of monthly fluctuations in the data on which the index is based, the three-month average of 3.4 percent may be a more reliable indicator of near-term growth.

The state's recovery is gathering momentum and is continuing to accelerate. According to the Current Economic Index, October marked the nineteenth month of the recovery in Massachusetts, which began in March 2003. The rate of growth in the state's real gross state product, as measured by the Current Economic Index, has steadily accelerated from an annual rate of 0.3 percent in the second quarter of 2003 to 3.3 percent in the third quarter of this year.

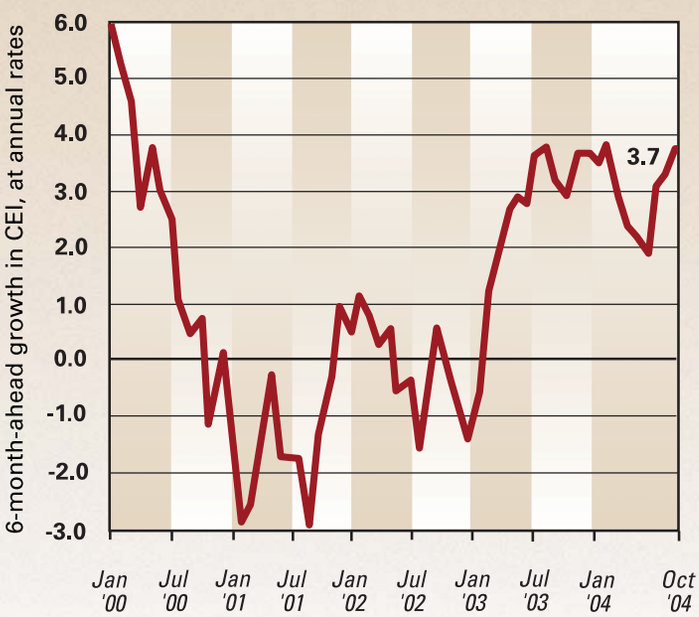
While the Massachusetts labor market has been slow to recover, its pace of recovery is very similar to that which followed the previous recession in the early 1990s. It was at about this same time into the recovery — about a year and a half — that the job market began to improve significantly. This pattern appears to be playing itself out again. Payroll employment rose substantially in October, and the sharp unemployment rate drop from August to September was maintained in October.

The 10 indicators that comprise the leading index usually do not all move together. Typically, some may indicate an expectation of faster than average growth, while others may indicate an expectation of slower than average growth. In October, four indicators contributed to a forecast of above-trend growth: total nonagricultural employment, sales taxes, the unemployment rate and the Bloomberg stock index for Massachusetts. Two indicators contributed to below-trend growth: consumer confidence for New England and motor vehicle sales taxes. Four indicators contributed to average-trend growth: withholding taxes, the interest rate spread between 10 year and 3 month U.S. Treasury securities, initial unemployment claims and construction employment.

Massachusetts Current Economic Index



Massachusetts Leading Economic Index



Sources: The Conference Board; University of Massachusetts; Federal Reserve Bank of Boston

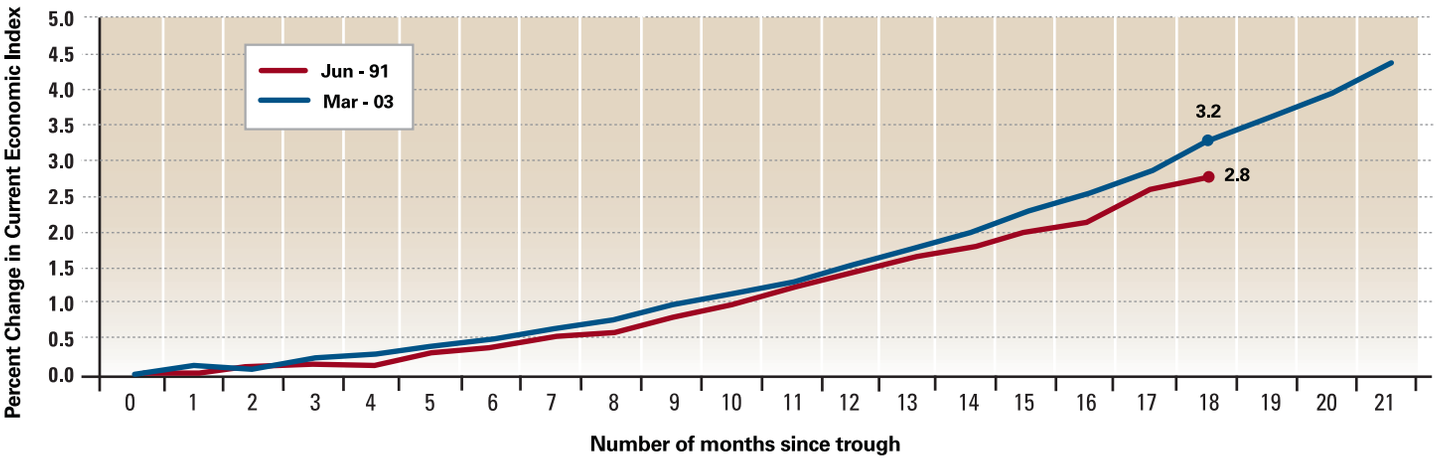
modest brain drain. Moreover, the tech boom that finally pulled Massachusetts out of the recession shows signs of fading, which may restrain the pace of growth going forward. Nevertheless, the recovery seems to be on solid footing, with rising earnings and consumer spending, and vitality in education, technology and science. It will just take some patience to wait for the economy's engine to get into full gear.

Like the last recession, a slow start

According to the Massachusetts Current Economic Index, the recession lasted 27 months in Massachusetts, beginning in December 2000 and ending in March 2003. This was much longer than the eight months of the national recession, which lasted from March through November 2003, and almost as long as the prior recession in Massachusetts that lasted 30 months, from December 1988 to June 1991. In the first 18 months of the state's recovery, real output, as measured by the Current Economic Index, rose by 2.8 percent, a slightly slower rate than the 3.2 percent growth during the first 18 months of the state's last recovery. (See Figure 1.). Like the last time, the pace of growth has slowly accelerated, from a 0.3 annual rate in the first quarter of the expansion to a 2.8 percent rate of growth in the third quarter of 2004. The state's economy is still growing more slowly than the nation as a whole, while GDP growth in the third quarter of 2004 was at a 4.0 percent annual rate. (See Figure 2.).

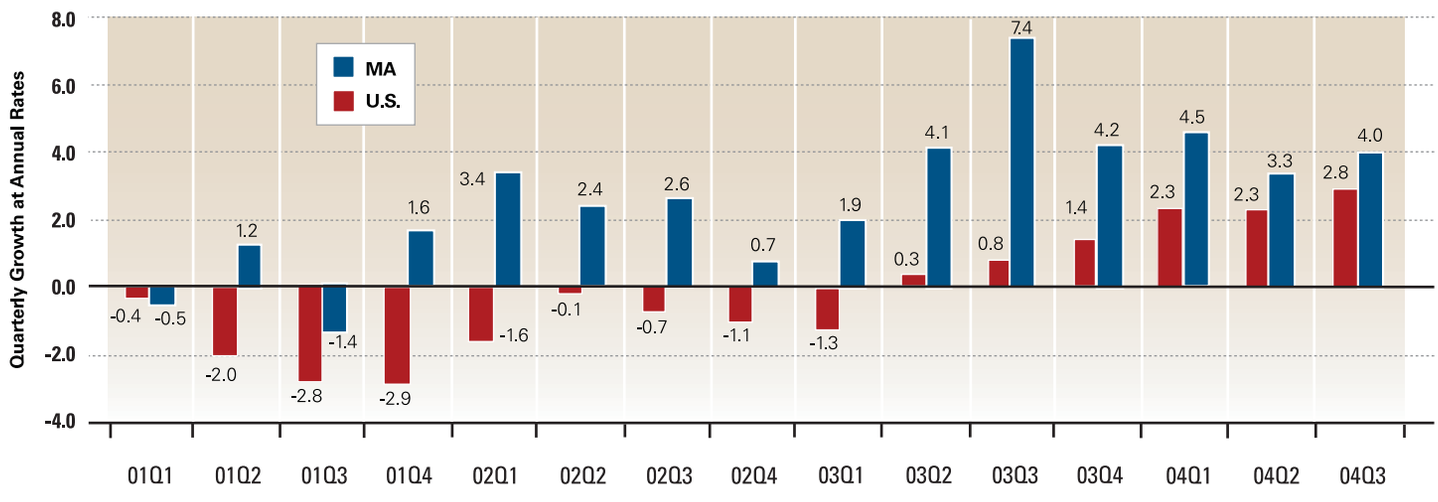
In terms of employment, the progress so far is also about the same as last time, and also about the same as the

Figure 1: Growth since trough, Massachusetts



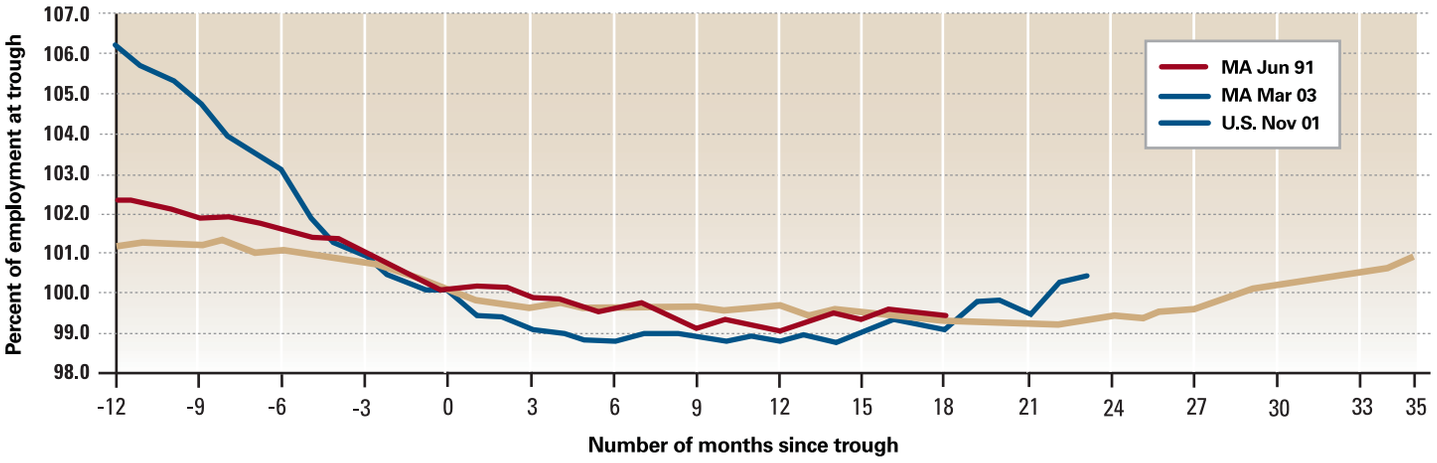
Source: University of Massachusetts

Figure 2: Growth in real product, Massachusetts Current Economic Index vs. U.S. GDP



Source: U.S. Bureau of Economic Analysis; author's calculation

Figure 3: Employment index since trough



Source: U.S. Bureau of Labor Statistics; U.S. Bureau of Economic Analysis; author's calculation

nation as a whole 18 months into its recovery. (See Figure 3.). In September, payroll employment in Massachusetts was at 99.4 percent of the level at the economy's turning point in March 2003. In other words, as of September, the state still had a jobless recovery. Eighteen months into the state's recovery that began in June of 1991, the recovery was also still jobless, with payroll employment at 99.1 percent of the turning point level; and 18 months into the national recovery that began in November 2001, U.S. payroll employment was 99.2 percent of its turning point level. So while the job market is still weak, it is not any worse than expected, given the early stage of this recovery.

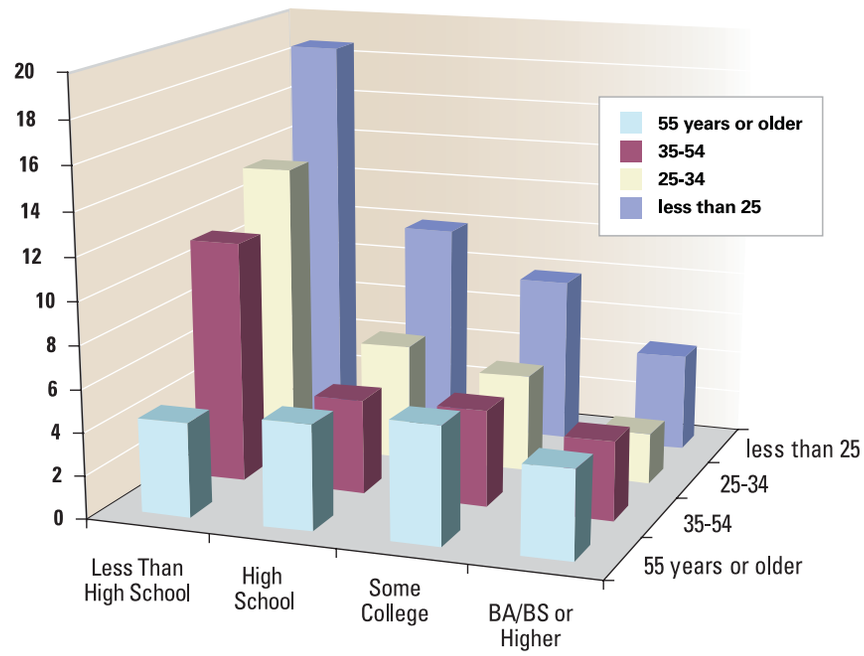
Payroll employment does appear to be finally growing, although at a tepid rate. In the first nine months of 2004, the payroll job count expanded by only 7,100 jobs, less than one thousand per month, for an annual rate of growth of only 0.3 percent.

Unemployment still a problem

Unemployment, especially long-term unemployment, remains a problem both here and in the nation. Labor markets remain weaker in Massachusetts than in most of the country. One may wonder how that can be if the unemployment rate is lower here than in the nation as a whole, as it has been for virtually the entire recession. The unemployment rate is lower in Massachusetts because of the demographic composition of the labor force. Unemployment rates vary substantially by age, educational attainment, sex, race and ethnicity. In particular, rates are inversely related to educational attainment. For the first nine months of this year, for example, the Massachusetts unemployment rate averaged 13.5 percent for those with less than a high school education, 5.5 percent for those with a high school education, 5.3 percent for those with less than a four-year college education, and 3.5 percent for those with a BA/BS or higher degree. This pattern is similar to that of the rest of the nation. (See Figure 4.). In fact, after controlling for differences in education, age and

Figure 4: Unemployment rates by education and age, Massachusetts

January – September 2004



Source: U.S. Bureau of the Census

sex between Massachusetts and the rest of the nation, the odds of being unemployed in Massachusetts are about seven percent higher than in the rest of the nation. This makes sense given the state's weaker employment growth.

As typically occurs in recessions, the average duration of unemployment among those who are looking for work or on layoff has risen. Long-term unemployment is, by convention, defined as exceeding six months. In 2000, at the peak of the last expansion, only about five percent of unemployed persons in Massachusetts were long-term unemployed (versus about ten percent in the rest of the nation). By 2003, this had risen to 27 percent in Massachusetts (versus 23 percent in the rest of the nation). For the first nine months of 2004, the proportion fell only very slightly, to 25 percent in the state (versus 22 percent in the rest of the nation). In terms of absolute numbers, this translates into an average of 53,800 long-term unemployed in 2003, and an average of 45,700 for the first nine months of 2004. By contrast, there were only 4,400 long-term unemployed in March of 2000. Long term unemployment continues to remain a problem for 1.3 percent of the state's labor force.

Migration and brain drain

Since the recession began, Massachusetts has experienced a net out-migration of persons, and what is likely a "brain drain" — a net outflow of those with college education. This is not surprising with a labor market that is weaker than in most of the nation. The net out-migration appears to be cyclically related and should reverse itself as the recovery continues. However, there is no evidence that this reversal has yet begun.

This analysis of recent migration flows is based on two sources: the U.S. Census Bureau's Population Estimates Branch and the Census Bureau's Current Population Survey's March Annual Social and Economic Supplements. The former comprises the most reliable annual estimates of net migration flows available, but the latter, although less reliable because of the small sample size on which they are based, include information on the demographic characteristics of migrants.

According to the more reliable Population Estimates figures, migration has turned from a net positive of 15,400 persons in the year ending July 1, 2001, to a net negative of 11,700 persons in the year ending July 1, 2003. For the three-year period ending July 1, 2003 — which roughly corresponds to the state's recession — there was a miniscule net positive inflow of 1,500 persons. However, this masks contrasting patterns between foreign and domestic migrants. Over this same time period, there was a net domestic out-migration of 98,800, which was just offset by a net positive international in-migration of 100,400. Moreover, the net

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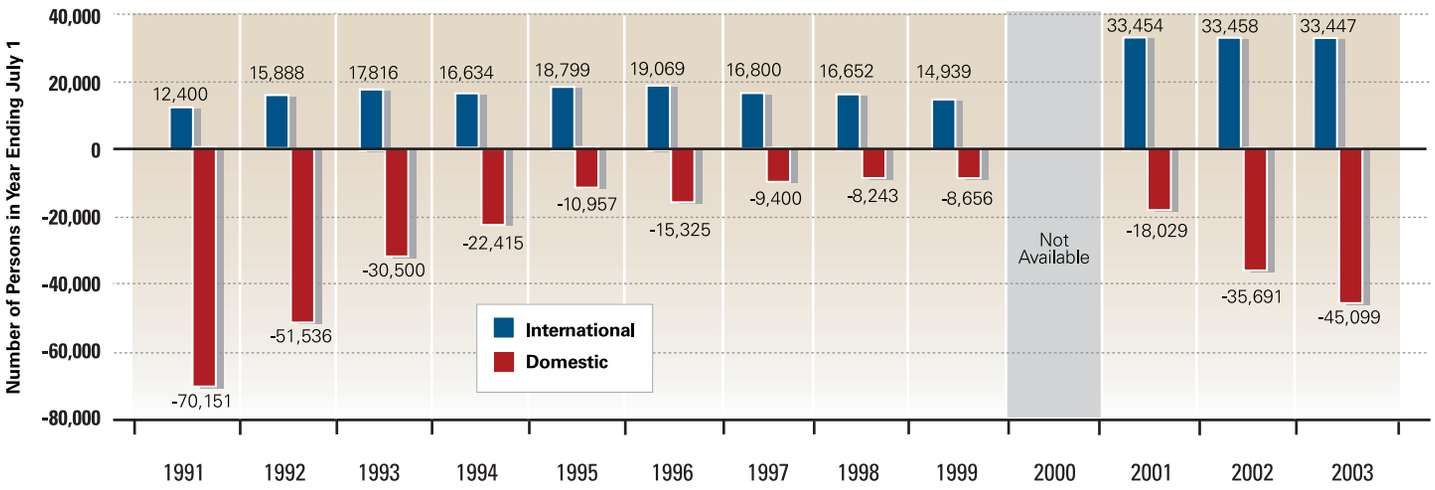
Figure 5: Net migration into Massachusetts



Source: U.S. Bureau of the Census, Population Estimates Branch

outflow of domestic migrants increased in each of these three years. (See Figure 5.).

The Current Population Survey (CPS) estimates show higher levels of net in-migration in 2001 and 2002, and a lower level of net out-migration in 2003 than do the Population Estimates. Except for 2001, the CPS estimates — given their sampling error — are consistent with those from the Population Estimates Branch. CPS estimates are also available for the year ending March 2004. Considering the most recent three March CPS's, which cover annual migration flows from March 2001 to March 2004, the CPS exhibits qualitatively the same trends as the Population Estimates. There was net domestic out-migration in each year, offset by foreign in-migration each year of roughly the same magnitude. (See Table 1.).

According to the CPS, there has been a net "brain drain." During the last three years (March 2001 to March 2004), 167,100 persons entered Massachusetts with a BA/BS degree or higher or to go college, while 174,900 left with a BA/BS or to go to college in another state, resulting in a net loss of 7,800 college-educated people. This loss is not welcome, but neither is it alarming. Losses of a greater magnitude probably occurred in the last recession of the early 1990s, yet Massachusetts increased its stock of college-educated residents for the decade as a whole. According to the decennial censuses of 1990 and 2000, the proportion of the state's population 25 or older with a BA/BS or higher degree rose from 27.2 percent in 1990 to 33.1 percent in 2000. Massachusetts started the decade as the second most highly-educated state by this measure, and ended the decade as the most highly-educated state. (The District of Columbia ranked higher than all states in both years.). Any net out-flows associated with the recession in the beginning of the decade were more than made up over the course of the expansion that followed. In the last five years of the decade, the net inflow of college-educated (BA/BS or higher degree) and college students was 94,200, according to the census.

Is the Tech Boom already over?

There is conflicting information over recent developments in demand and production of information processing and related equipment. The Semiconductor Industry Association reports that excess inventories of chips developed in the second quarter of 2004, quickly followed by declining capacity utilization rates as producers responded to inventories. Despite the falling production rate of semiconductors, sales of chips continued to rise briskly through August, presumably drawing down inventories somewhat.

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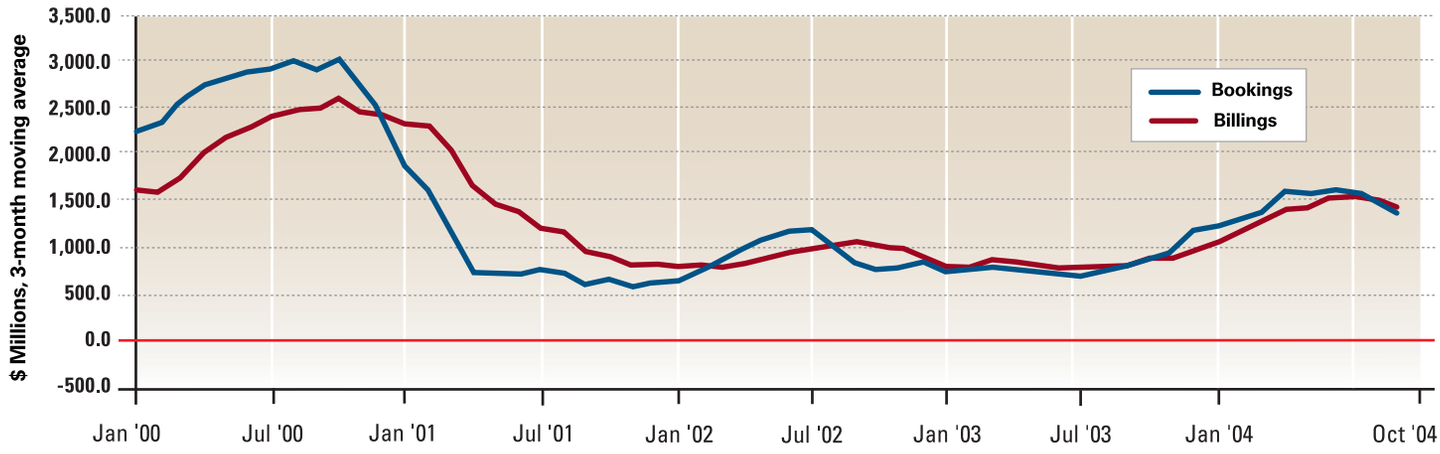
But another industry association, Semiconductor Equipment and Materials International, reported that semiconductor equipment makers are feeling the inventory adjustment in slower orders for new equipment in recent months. Orders at North American semiconductor equip-

Table 1: Massachusetts migration estimates

	IN-MIGRATION			OUT-MIGRATION		
Year	Domestic	Foreign	Total	Domestic	Net Domestic Migration	Net Total Migration
1998	110,259	41,012	151,271	151,968	-41,709	-697
1999	132,483	38,708	171,191	142,408	-9,925	28,783
2000	179,381	48,787	228,168	129,634	49,747	98,534
2001	194,200	121,604	315,804	83,955	110,245	231,849
2002	142,448	44,974	187,422	154,684	-12,236	32,738
2003	153,325	16,656	169,981	178,710	-25,385	-8,729
2004	113,334	33,518	146,852	152,314	-38,980	-5,462

Source: U.S. Bureau of the Census, Current Population Survey

Figure 6: Worldwide semiconductor equipment billings and bookings



Source: Semiconductor Equipment and Materials International

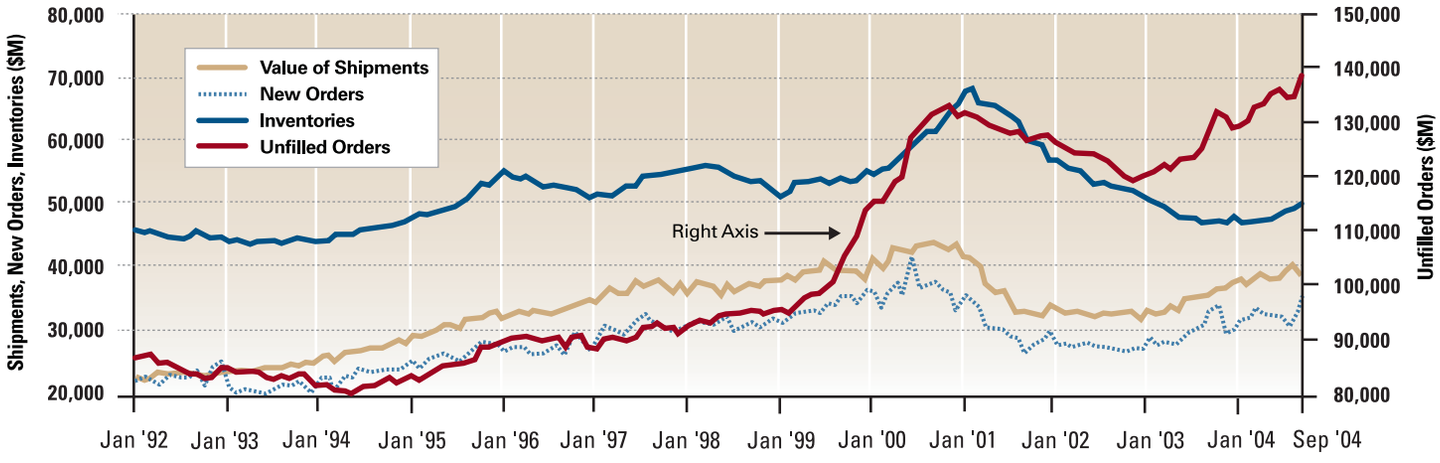
ment makers fell by 16 percent from June to September, and sales fell seven percent since July. (See Figure 6.). The book-to-bill ratio has fallen below one, indicative of future declines in production.

Most disturbing is the sharp drop in the growth of U.S. investment in information and processing equipment and software. According to the BEA's latest GDP report, investment growth (in current dollars) in the third quarter of 2004 fell to an annualized rate of only 1.6 percent after growing at a rate of more than 10 percent in each of the six prior quarters. This is especially worrisome because the generous depreciation allowances that help spur business investment will be cut back when the temporary provisions expire in 2005, which may further weaken demand for this equipment.

Conditions in the national computer and electronic products industry, which according to the North American Industry Classification System (NAICS) is the largest NAICS manufacturing industry in the state, are difficult to interpret. Sales fell slightly in September, but have been generally strong. Inventories are rising, but the inventory-to-sales ratio is still near recent historical lows, and unfilled orders are higher than ever. Orders have been volatile, growing rapidly during most of 2003 until October, then declining through July of 2004, only to grow rapidly once again through September. (See Figure 7.).

Industrial production of information and processing equipment has continued to grow quite strongly. According to the index released by the Board of Governors of the Federal Reserve, production levels in September 2004 were 12.5 percent above the prior year. Perhaps production will slow if inventories are indeed high. The growth rate in the index did slow to an annual rate of 3.7 percent in September over the prior month, but a single month is not a reliable indicator of a trend.

Figure 7: Computers and electronic products, U.S.



Source: U.S. Bureau of the Census

What has this meant for Massachusetts? Unfortunately, there is very little data at the state level on information processing equipment production, though anecdotes suggest a slowdown in the semiconductor and semiconductor equipment industries. After several months of gains, the number of jobs in the computers and electronic products industry fell by a modest 600 in September. Employment in the industry is up 2.2 percent over the prior year.

Unfortunately, there is very little data at the state level on information processing equipment production, though anecdotes suggest a slowdown in the semiconductor and semiconductor equipment industries.

One of the best indicators of production in the state's broad technology sector, which includes not only computers and related equipment but also medical equipment, biotechnology and pharmaceuticals, is merchandise exports. After peaking at a very high level in May, exports have declined through August. While merchandise exports nationally have also been weak over the past several months, the export decline is worse in Massachusetts because of the state's more intense concentration in technology production, which has slowed with the overall slump in the technology sector.

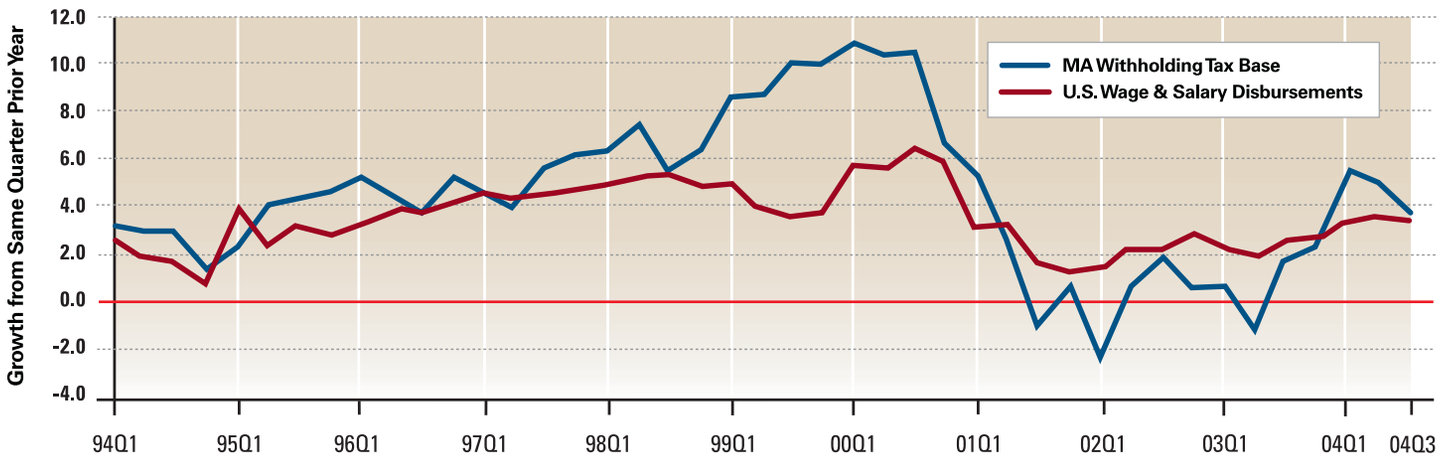
Despite the slow start, a solid footing

Several developments suggest that the recovery has a solid footing and will continue. Employment is growing in export sectors in manufacturing and key knowledge industries. Massachusetts is a technology-based economy, and technology is where the most significant employment growth has been. The leading NAICS industries in terms of growth in the last six months (ending in September 2004) include many in manufacturing, among them computers, semiconductors, machinery, medical equipment, plastics and chemicals; professional services tied to technology or business including scientific research and development, software, accounting and legal services. In addition, employment growth has continued in the large and important health services and educational service sectors. These gains have more than offset job losses in sectors that have been strong in the past, such as construction, money management, and retail trade.

Earnings are rising, both in the aggregate and per worker. In the year ending in October, total wages and salaries in Massachusetts, estimated from withholding taxes, grew by 5.3 percent. Wage rate growth was stagnant during the recession, but began to grow again once the recovery began. (See Figure 8.). Wage rate growth in Massachusetts has finally caught up and again surpassed that of the nation. In the third quarter of 2004, wages and salaries per worker were 3.8 percent above the year-earlier third quarter, while rising by 3.4 percent over the same period nationally.

Consumer spending also appears to be on an upward trend in Massachusetts. State sales taxes (excluding automobiles and meals) declined from the summer of 2000 until

Figure 8: Growth in nominal wages per worker, Massachusetts vs. Nation



Source: U.S. Bureau of Economic Analysis; Massachusetts Department of Revenue; author's calculations

February 2004, but have since grown quickly. This tax series is highly volatile, but the trend over the last 12 months has been very strong, exceeding a 10 percent annual rate.

Continued slow growth in the near future

Eighteen months after the turning point during the last recovery, the economy continued to accelerate, as did both the rate of output and employment growth. This time around, the rate of acceleration will probably be more subdued. In fact, the leading index for October is predicting a moderate rate of growth for an expansion period through the first quarter of 2005; it is predicting a continuation of growth in real gross state product of 2.7 percent, about the pace of growth in the third quarter of 2004.

Several factors may account for this prolonged spell of slow growth. One is the leveling off of the tech-driven boom in information processing equipment. This is likely to be a short-run phenomenon, lasting between several months to a year. The cycle in semiconductors is driven more by the timing of technological advances and inventories than by general business conditions. The inventory adjustment in this industry already appears to be well under way and should be short-lived.

High energy prices are shaving growth almost everywhere except in oil-producing countries. Although the United States is much less energy dependent than it was during the last oil crisis, some emerging economies that buy Massachusetts exports, such as China, are not, which will dampen demand for Massachusetts exports. China's attempt to slow down its economy, to the extent it is successful, will be felt here as well.

This is an expensive heating season for households in the Northeast, which will cut into consumer spending on other items.

The large current and future budget deficits, which are diverting money from funding private, productivity-enhancing investments and research and development, will be an increasing problem down the road. The deficit may have already contributed to a falling dollar and will lead to a diminution of the willingness of foreigners to fund the national debt or invest in American businesses. This threatens the vitality of the Massachusetts economy, which is tied to developing new products and technologies, which rely in large part on privately funded research and development spending.

Unlike the last recovery, the United States is at war. War spending, which diverts resources from the rest of the economy, is inherently non-productive. While some Massachusetts firms may benefit from developing technologies and products for the war effort or for homeland security, this is a high cost to pay for a few spin-offs that may ultimately benefit consumers or business productivity.

This time around, the rate of acceleration will probably be more subdued. In fact, the leading index for October is predicting a moderate rate of growth for an expansion period through the first quarter of 2005.

The war may also be a factor in declining foreign student enrollment in the nation and state. According to the Institute of International Education's annual Open Doors survey, the number of international students enrolled in U.S. higher education institutions declined for the first time in 32 years. Massachusetts saw a five percent decline in enrollment of international students. The survey reported that increased difficulties in obtaining student visas, as well as the perceptions that foreign students are not welcome in the United States, were factors in this decline.

References:

[1] These recessions are dated for Massachusetts by the Massachusetts Current Economic Index, and for the U.S. by the National Bureau of Economic Research's Business Cycle Dating Committee.

[2] According to the official payroll job count, jobs expanded 7,000 between December 2003 and September 2004, but by a sizeable 22,600 since February 2004. This figure cannot be trusted, however, due to the problems with the seasonal adjustment problems in the official data. The payroll numbers reported here are the official non-seasonally adjusted counts seasonally adjusted by the University of Massachusetts.

[3] These unemployment rates are from the monthly Basic CPS's for January 2004 through December 2004. The unemployment rates are taken directly from the CPS, that is, they are neither seasonally adjusted nor smoothed.

[4] This is based on a logit regression of whether or not one is unemployed on age, educational attainment, and sex, with dummy variables for year (2004 vs. 2003) and residence in Massachusetts (vs. the rest of the U.S.). The regression is on the sample of persons in the labor force, from the monthly Basic CPS's for January 2003 through September 2004.

[5] These data are from the March CPS's for 1998-2002, and from the monthly Basic CPS's for January 2003 through September 2004.

[6] The Population Estimates Branch presents mid-year estimates of the population as of July 1 each year. The net migration flows are part of the components of population change. The other components are births, deaths, and a (small) residual.

[7] Domestic migration is composed of flows across state borders by within the U.S., while foreign, or international, migration is composed of flows into or out of the U.S. One should be careful not to equate domestic migration with migration of American citizens, and foreign migration as migration of the foreign born. A person is counted as a foreign migrant if they enter the U.S. from another country in the year in question, regardless of whether or not they are a U.S. citizen. Roughly 5 percent of foreign migrants are U.S. citizens. If a foreign-born immigrant who comes to the U.S. as a foreign migrant in one year subsequently moves to a different state in another year, they are counted as a domestic migrant in that year In 2003, for example, about 45 percent of migrants who were foreign born were domestic migrants. (U.S. Census Bureau, Current Population Reports, P20-549, issued March 2004.)

[8] The annual period is defined differently in the CPS. The figure for each year refers to approximately March 15 of the prior year to March 15 of the current year.

[9] The approximate standard errors are as follows. For a one year gross flow, e.g., domestic plus foreign in migration or domestic out migration, 30,000. For a three-year grow flow, 52,000. For a one year net migration flow, e.g., domestic plus foreign in migration less domestic out migration, 42,000. For a three-year net migration flow, 73,000. (Calculated by the author.)

[10] Unlike the Population Estimates Branch, the CPS measures only international in migration, not net international migration.

[11] In accounting for net changes in the stock of college educated due to migration, college students should be counted in both inflows and outflows. Otherwise, a state with a large net inflow of college students could appear to have a net outflow of college educated among recent college graduates even if the opposite was actually the case.

[12] Merchandise exports, from WISER, were seasonally adjusted by the University of Massachusetts.

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